In the Claims:

1. (Currently amended) An optically pumped radiation-emitting semiconductor device having a semiconductor body which includes at least one pump radiation source (20) and a surface-emitting quantum well structure (11), the pump radiation source (20) and the quantum well structure (11) being in monolithically integrated form, and the pump radiation source (20) generating pump radiation (2) for optically pumping the quantum well structure (11), ~~characterized in that~~ wherein a recess (10) for introducing the pump radiation (2) into the quantum well structure (11) is formed in the semiconductor body between the pump radiation source (20) and the quantum well structure (11).

2. (Currently amended) The semiconductor device as claimed in claim 1, ~~characterized in that~~ wherein the recess (10) is in trench form and runs obliquely or perpendicular with respect to a direction of propagation of the pump radiation (2).

3. (Currently amended) The semiconductor device as claimed in claim 1 [[or 2]], ~~characterized in that~~ wherein the recess (10) has a first side face (26) facing the pump radiation source (20) and an opposite, second side face (27) facing the quantum well structure (11), the pump radiation (2) entering the recess (10) through the first side face (26) and then entering the quantum well structure (11) through the second side face (27).

4. (Currently amended) The semiconductor device as claimed in claim 3, ~~characterized in that~~ wherein the second side face (27) is parallel to the first side face (26).

5. (Currently amended) The semiconductor device as claimed in claim 3 [[or 4]], ~~characterized in that~~ wherein the first and/or the second side face (26, 27) includes an angle equal to the Brewster angle with a direction of propagation of the pump radiation (2), in particular with a main direction of emission of the pump radiation source (20).

6. (Currently amended) The semiconductor device as claimed in claim 1 ~~one of claims 1 to 5~~, ~~characterized in that~~ wherein the recess (10) is filled with a dielectric or a semiconductor material.

7. (Currently amended) The semiconductor device as claimed in claim 6, ~~characterized in that~~ wherein the recess (10) is filled with a material which has a refractive index substantially equal to the refractive index of the pump radiation source (2), the refractive index of the quantum well structure (11) or the geometric mean of the latter two refractive indices.

8. (Currently amended) The semiconductor device as claimed in claim 1 ~~one of claims 1 to 7~~, ~~characterized in that~~ wherein the semiconductor device comprises a vertical emitter with a radiation-generating region formed by the quantum well structure (11).

9. (Currently amended) The semiconductor device as claimed in claim 8, ~~characterized in that~~ wherein the vertical emitter is a vertically emitting laser, in particular a VCSEL or a disc laser.

10. (Currently amended) The semiconductor device as claimed in claim 1 ~~one of claims 1 to 9, characterized in that~~ wherein the pump radiation source (20) is a pump laser.

11. (Currently amended) The semiconductor device as claimed in claim 10, ~~characterized in that~~ wherein the pump laser is an edge-emitting laser.

12. (Currently amended) The semiconductor device as claimed in claim 10 ~~or 11, characterized in that~~ wherein the pump laser is a ring laser.

13. (Currently amended) The semiconductor device as claimed in claim 10 ~~one of claims 10 to 12, characterized in that~~ wherein the pump laser has a resonator, and the quantum well structure (11) is arranged within the resonator.

14. (Currently amended) The semiconductor device as claimed in claim 1 ~~one of claims 1 to 13, characterized in that~~ wherein the pump radiation (2) is introduced into the quantum well structure (11) in the lateral direction.

15. (Currently amended) The semiconductor device as claimed in claim 1 ~~one of claims 1 to 14, characterized in that~~ wherein the pump radiation source (20) and the surface-emitting quantum well structure (11) are formed from different semiconductor layer sequences.

16. (Currently amended) The semiconductor device as claimed in claim 1 ~~one of claims 1 to 15, characterized in that~~ wherein the pump radiation source (20) and the surface-emitting quantum well structure (11) are formed epitaxially and in succession.

17. (Currently amended) The semiconductor device as claimed in claim 1 ~~one of claims 1 to 16, characterized in that~~ wherein the recess (10) is arranged in a grow-in region between the pump radiation source (20) and the surface-emitting quantum well structure (11).

18. (Currently amended) The semiconductor device as claimed in claim 1 ~~one of claims 1 to 17, characterized in that~~ wherein in that the pump radiation source (20) has at least one waveguide layer (23, 24).

19. (Currently amended) A method for fabricating an optically pumped semiconductor device having a semiconductor body which includes a surface-emitting quantum well structure (11) and at least one pump radiation source (20) which generates pump radiation (2) for optically pumping the quantum well structure (11), the pump radiation source (2) and the quantum well structure (11) being monolithically integrated, comprising the steps of:

a) providing a substrate (1),

b) epitaxially growing a plurality of semiconductor layers on to the substrate (1), which layers include the quantum well structure (11),

c) partially removing the semiconductor layers, and

d) epitaxially growing the pump radiation source (20) in the region uncovered by the removal in step c) so that the pump radiation source (20) adjoins the quantum well structure (11),

~~characterized in that~~ wherein

a recess (10) for introducing the pump radiation (2) into the quantum well structure (11) is formed between the pump radiation source (20) and the quantum well structure (11).

20. (Currently amended) The method as claimed in claim 19, ~~characterized in that~~ wherein in step d) semiconductor layers are grown in order to form the pump radiation source (20), these layers in a grow-in region (19), at least partially growing together in the lateral direction with the quantum well structure (11), and the recess (10) is formed by at least partial removal of the grow-in region (19).

21. (Currently amended) The method as claimed in claim 19 ~~or 20~~, ~~characterized in that~~ wherein the recess (10) is formed by etching, in particular, wet-chemical or dry-chemical etching.

22. (Currently amended) The method as claimed in claim 19 ~~one of claims 19 to 21~~, ~~characterized in that~~ wherein the recess (10) is designed in trench form, in particular as an etched trench.

23. (Currently amended) The method as claimed in claim 19 ~~one of claims 19 to 22~~, ~~characterized in that~~ wherein the recess (10) is filled with a material which transmits the pump radiation.

24. (Currently amended) The method as claimed in claim 23, ~~characterized in that~~ wherein the recess (10) is filled with silicone or a semiconductor material.

25. (Currently amended) A method for fabricating an optically pumped semiconductor device having a semiconductor body which includes a surface-emitting quantum well structure (11) and at least one pump radiation source (20) which generates pump radiation (2) for optically pumping the quantum well structure (11), the pump radiation source (2) and the quantum well structure (11) being monolithically integrated, comprising the steps of:

a) providing a substrate (1),

b) epitaxially growing a plurality of semiconductor layers on to the substrate (1), which layers include the pump radiation source (20) and form the quantum well structure (11),

c) forming a window in the plurality of semiconductor layers for the quantum well structure (11), and

d) epitaxially growing the quantum well structure (11) in the window so that the pump radiation source (20) adjoins the quantum well structure (11),

~~characterized in that~~ wherein

a recess (10) for introducing the pump radiation (2) into the quantum well structure (11) is formed between the pump radiation source (20) and the quantum well structure (11).

26. (Currently amended) The method as claimed in claim 25, ~~characterized in that~~ wherein in step d) semiconductor layers are grown in order to form the quantum well structure (11), these layers in a grow-in region, at least partially growing together in the lateral direction with the layer sequence of the pump radiation source (20), and the recess (10) is formed by at least partial removal of the grow-in region (19).

27. (Currently amended) The method as claimed in claim 25 ~~or 26~~, ~~characterized in that~~ wherein the recess (10) is formed by etching, in particular, wet-chemical or dry-chemical etching.

28. (Currently amended) The method as claimed in claim 25 ~~one of claims 25 to 27~~, ~~characterized in that~~ wherein the recess (10) is designed in the form of a trench, in particular as an etched trench.

29. (Currently amended) The method as claimed in claim 25 ~~one of claims 25 to 28~~, ~~characterized in that~~ wherein the recess (10) is filled with a material which transmits the pump radiation.

30. (~~characterized in that~~ wherein) The method as claimed in claim 29, ~~characterized in that~~ wherein the recess (10) is filled with silicone or a semiconductor material.